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DOCKET NO.: BMS-2507/PH7330A

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Robert E. Lewis, et al.

Confirmation No.: Not Yet Assigned

Application No.: 10/762,990

Group Art Unit: Not Yet Assigned

Filing Date: January 22, 2004

Examiner: Not Yet Assigned

For: **METHOD AND APPARATUS FOR SEPARATING IONS OF METALLIC ELEMENTS IN AQUEOUS SOLUTION**

DATE OF DEPOSIT:

*May 14, 2004*

I HEREBY CERTIFY THAT THIS PAPER IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL, POSTAGE PREPAID, ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO THE UNITED STATES PATENT AND TRADEMARK OFFICE, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450.

*Elizabeth A. McLoud*

TYPED NAME: Elizabeth A. McLoud

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Commissioner for Patents  
P.O. Box 1450  
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Dear Sir:

**INFORMATION DISCLOSURE STATEMENT**

Pursuant to 37 CFR § 1.56 and in accordance with 37 CFR §§ 1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 CFR § 1.56(b).



In accordance with § 1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of

the above identified application as set forth in § 1.491, before the mailing date of a first Office Action on the merits of the above-identified application, or before the mailing date of a first Office Action after the filing of request for continued examination under § 1.114, no additional fee is required.

☐ In accordance with § 1.129(a), this Information Disclosure Statement is being filed in connection with ☐ the first or ☐ second After Final Submission, therefore:

☐ Certification in Accordance with § 1.97(e) is attached; or

☐ The fee of **\$180.00** as set forth in § 1.17(p) is attached.

☐ In accordance with § 1.97(c), this Information Disclosure Statement is being filed after the period set forth in § 1.97(b) above but before the mailing date of either a Final Action under § 1.113 or a Notice of Allowance under § 1.311, or before an action that otherwise closes prosecution in the application, therefore:

☐ Certification in Accordance with § 1.97(e) is attached;

or

☐ The fee of **\$180.00** as set forth in § 1.17(p) is attached.

☐ In accordance with § 1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under § 1.113 or a Notice of Allowance under § 1.311 but before, or simultaneously with, the payment of the Issue Fee, therefore included are: Certification in Accordance with § 1.97(e); and the submission fee of **\$180.00** as set forth in § 1.17(p).

☐ Copies of each of the references listed on the attached Form PTO-1449 are enclosed herewith.

- ☒ Copies of references listed on the attached Form PTO-1449 are enclosed herewith
- ☒ Copies of references listed on the attached Form PTO 1449 are not required to be submitted pursuant to the June 30, 2003 recent revisions to 37 CFR § 1.98(a)(2)(i).

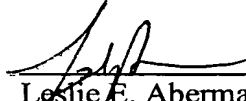
EXCEPT THAT:

- ☐ In view of the voluminous nature of references [list as appropriate], and the likelihood that these references are available to the Examiner, copies are not enclosed herewith.
- ☒ In accordance with § 1.98(d), copies of the following references listed on the attached Form PTO-1449 are not enclosed herewith because they were previously cited by or submitted to the U.S. Patent and Trademark Office in patent application(s) for which a claim for priority under 35 U.S.C. § 120 have been made in the instant application:
  - ☒ Copies of references **1-35 and 39-42** listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior Application No. **10/321,333**, filed **December 17, 2002**.

Please charge any deficiency or credit any overpayment to Deposit Account No. 23-3050. This form is submitted in duplicate.

- ☐ The relevance of those listed references which are not in the English language is as follows:
- ☒ There are no listed references which are not in the English language.

Date: May 14, 2004

  
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<b>Form PTO-1449 Modified</b>  List of Patent and Publications Cited by Applicant (Use several sheets if necessary)  U.S. Department of Commerce Patent and Trademark Office	Docket No. BMS-2507/PH7330A	Application No. 10/762,990
	Applicant Robert E. Lewis, et al.	
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<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>		
	<b>1</b>	Achuthan, P.V., et al., "Separation of carrier-free <sup>90</sup> Y from high level waste by extraction chromatographic technique using 2-ethylhexyl-2-ethylhexyl phosphonic acid (KSM-17)," <i>Separation Science and Technology</i> , <b>2000</b> , 35(2), 261-270
	<b>2</b>	Campbell, J.A., et al., "A generator system for thallium-201," <i>J. Labelled Compounds and Radiopharmaceuticals</i> , <b>1977</b> , 13(3), 437-443
	<b>3</b>	Case, N., et al., <i>ORNL Radioisotope Manual, U.S.A.E.C. Report</i> , 30 <sup>th</sup> Ed., June <b>1964</b> , ORNL-3633, TID 4500, 1-212
	<b>4</b>	Chmutova, M.K., et al., "Extraction of transplutonium elements with diphenyl (alkyl-carbamoylmethyl phosphine oxides)," <i>J. Radioanal. Chem.</i> , <b>1983</b> , 80(1-2), 63-69
	<b>5</b>	Chmutova, M.K., et al., "Extraction and concentration of transplutonium elements from nitric acid solutions by diphenyl [dialkylcarbamoylmethyl] phosphine oxides," <i>Sov. Radiochem. Eng. Transl.</i> , <b>1982</b> , 24, 27-33
	<b>6</b>	Database WPI, "Separate radioactive nuclide solution treat active carbon chelate ion exchange resin," JP 57 048699 A, <i>Derwent Publications Ltd., London</i> , March 20, <b>1982</b> , XP002237684 (abstract), 1 page
	<b>7</b>	Database WPI, "Scandium extract titanium tetra chloride produce waste treat waste solution reduce agent alkaline reagent filter dissolve residue hydrochloric acid contact solid neutral organo phosphorus extract," RU 2 068 392, <i>Derwent Publications Ltd., London</i> , October 27, <b>1996</b> (AN- <b>1997</b> ), XP-002237685 (abstract), 1 page
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	<b>9</b>	Deqian, L., et al., "Extraction separation of rare earth elements, scandium and thorium with mono (2-ethyl hexyl) 2-ethyl hexyl phosphonate (HEH(EPH))," <i>Int. Solvent Extr. Conf.</i> , <b>1980</b> , 3, 80-202, 1-10
	<b>10</b>	Deqian, L., et al., "Chemical problems and extraction mechanism in technology of extraction separation of rare earth elements (III) with mono (2-ethyl hexyl)2-ethyl hexyl phosphonate," <i>New Frontiers in Rare Earth Science and Applications</i> , Guangxian, X. (Ed.), <b>1985</b> , 1, 463-467
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**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

11	Gatrone, R.C., et al., "The synthesis and purification of the carbamoylmethylphosphine oxides," <i>Solvent Extr. and Ion Exch.</i> , <b>1987</b> , 5(6), 1075-1116
12	Horwitz, E.P., et al., "Octyl(phenyl)-N,N-diisobutylcarbamoylmethylphosphine oxide as an extractant for actinides from nitric acid waste," <i>ISEC'83, International Solvent Extraction Conference</i> , August 26-September 2, <b>1983</b> , 451-452
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15	Inoue, K., et al., <i>Nippon Kogyo Kaishi</i> , <b>1984</b> , 102, 491-494 (English Abstract on page 494)
16	Jackson, P.T., et al., "Intermolecular interactions involved in solute retention on carbon media in reversed-phase high-performance liquid chromatography," <i>Anal. Chem.</i> , <b>1997</b> , 69, 416-425
17	Lagunas-Solar, M.C., et al., "An integrally shielded transportable generator system for thallium-201 production," <i>Int. J. Appl. Radiat. Isot.</i> , <b>1982</b> , 33, 1439-1443
18	Malinin, A.B., et al., "Production of "no-carrier-added" <sup>201</sup> Tl," <i>Int. J. Appln. Radiat. Isot.</i> , <b>1984</b> , 35, 685-687
19	Mathur, J.N., et al., "Partitioning of actinides from high-level waste streams of purex process using mixtures of CMPO and TBP in dodecane," <i>Waste Management</i> , <b>1993</b> , 13, 317-325
20	Mathur, J.N., et al., "Extraction of actinides and fission products by octyl(phenyl)-N,N-diisobutylcarbamoylmethyl-phosphine oxide from nitric acid media," <i>Talanta</i> , <b>1992</b> , 39(5), 493-496

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	<b>21</b>	Medved, T.Y., et al., "Oxides of dialkyl (diaryl) [dialkyl-carbamoylmethyl] phosphines," <i>Bulletine of the Acad. of Sci. of the U.S.S.R., Chem. Science</i> , September 1981, 1743-1746
	<b>22</b>	Mori, Y., et al., "Extraction equilibrium and kinetics of some lanthanoid with acidic organophosphorus extractants," <i>Proc. Symp. Solvent Extr.</i> , Jpn. Assoc. Solvent Extr. Hamamatsu, Japan, 1984, 119-124
	<b>23</b>	Muscatello, A.C., et al., "Synergistic extraction of plutonium and americium by bifunctional organophosphoric reagents," <i>ISEC '83 International Solvent Extraction Conference</i> , August 26-September 2, 1983, page 72-73
	<b>24</b>	Muscatello, A.C., et al., "The extraction of Am(III) and Eu(III) from aqueous ammonium thiocyanate by dihexyl- <i>N,N</i> -diethylcarbamoylmethylphosphonate and related compounds," <i>Sep. Sci. Technol.</i> , 1982, 17(6), 859-875
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	<b>27</b>	Partridge, J.A., et al., "Purification of DI-(2-ethylhexyl)phosphoric acid by precipitation of copper(II) di-(2-ethylhexyl)phosphate," <i>J. Inorg. Nucl. Chem.</i> , 1969, 31, 2587-2589
	<b>28</b>	Peppard, D.F., et al., "Fractional extraction of the lanthanides as their di-alkyl orthophosphates," <i>J. Inorg. Nucl. Chem.</i> , 1957, 4, 334-343
	<b>29</b>	Peppard, D.F., et al., "Acidic esters of phosphonic acid as selective extractants for metallic cations-selected M(III) tracer studies," <i>J. Inorg. Nucl. Chem.</i> , 1961, 18, 245-258
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	<b>31</b>	Qaim, S.M., et al., "Production of $^{201}\text{Tl}$ and $^{203}\text{Pb}$ via proton induced nuclear reactions on natural thallium," <i>Int. J. Appl. Radiat. Isot.</i> , <b>1979</b> , 30, 85-95
	<b>32</b>	Shadrin, A.Y., et al., "Extraction with the solution of diphenyl [dibutylcarbamoylemethyl] phosphine oxide in polar solvent," <i>Nuclear Materials Technology and Nuclear Fuel Cycle</i> , September 14, <b>1992</b> , 281-283
	<b>33</b>	Shultz, W.W., et al., "Recent progress in the extraction chemistry of actinide ions," <i>J. Less-Common Metals</i> , <b>1986</b> , 122, 125-138
	<b>34</b>	Warf, J.C., "Extraction of cerium(IV) nitrate by butyl phosphate <sup>1a</sup> ," <i>J. Am. Chem. Soc.</i> , September <b>1949</b> , 71, 3257-3258
	<b>35</b>	Wilke, J.S., et al., "Chemistry for commercial scale production of yttrium-90 for medical research," <i>Appl. Radiat. Isot.</i> , <b>1990</b> , 41(9), 861-865
	<b>36</b>	Campbell, J.A., "A generator system for thallium-201," <i>J. of Labelled Compounds and Radiopharmaceuticals</i> , <b>1977</b> , 13(3), 437-443
	<b>37</b>	Lebowitz, E., et al., "Thallium-201 for medical use. I," <i>J. of Nucl. Med.</i> , <b>1975</b> , 16(2), 151-155
	<b>36</b>	Malinin, A.B., et al., "Production of "No-Carrier-Added" $^{201}\text{Tl}$ ," <i>Int. J. Appl. Radiat. Isot.</i> , <b>1984</b> , 35(7), 685-687
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### U. S. PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Name	Class	Subclass
	39	3,993,538	11/23/76	Lebowitz, et al.	176	11
	40	5,368,736	11/29/94	Horwitz, et al.	210	635
	41	5,512,256	04/30/96	Bray, et al.	423	2
	42	6,309,614 B1	10/30/01	Horwitz, et al.	423	2

### FOREIGN PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Country	Translation	
					YES	NO

<b>EXAMINER</b>	<b>DATE CONSIDERED</b>
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